

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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To:

HEATHER June, Donald  
SPOOR & FISHER  
PO Box 41312  
2024 Craighall  
AFRIQUE DU SUD

SPOOR &amp; FISHER

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NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing  
(day/month/year)

28.01.2005

Applicant's or agent's file reference  
PA136438/PCT

## IMPORTANT NOTIFICATION

International application No.  
PCT/B 03/05626

International filing date (day/month/year)  
04.12.2003

Priority date (day/month/year)  
05.12.2002

Applicant  
STRYDOM, Johannes Matthys

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

## 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/B301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international  
preliminary examining authority:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Authorized Officer

Ottaviani, P

Tel. +49 89 2399-2225




# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>PA136438/PCT</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA416)	
International application No. <b>PCT/B 03/05626</b>	International filing date ( <i>day/month/year</i> ) <b>04.12.2003</b>	Priority date ( <i>day/month/year</i> ) <b>05.12.2002</b>
International Patent Classification (IPC) or both national classification and IPC <b>H02K21/24</b>		
Applicant <b>STRYDOM, Johannes Matthys</b>		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 9 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 3 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the opinion</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>		
Date of submission of the demand  <b>12.05.2004</b>	Date of completion of this report  <b>28.01.2005</b>	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  <b>Sedlmeyer, R</b>  Telephone No. +49 89 2399-7370	



JC20 Rec'd PCT/PTO 03 JUN 2005

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/IB 03/05626

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-17 as originally filed

**Claims, Numbers**

1-15 filed with telefax on 05.10.2004

**Drawings, Sheets**

1-4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☒ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

**see separate sheet**

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	None
	No: Claims	1-15
Inventive step (IS)	Yes: Claims	None
	No: Claims	1-15
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	None

**2. Citations and explanations**

**see separate sheet**

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**Re Item I**

**Basis of the report**

- I.1 Amended claims 1 - 15 as filed with fax of 12 May 2004 are the basis for this report. Although a full examination was carried out, the applicant should note that:
- I.2 Amended claims 1, 14 and 15 contain amendments which are considered to go beyond the disclosure as originally filed which is in contradiction to Art.19(2) and Art. 34(2)(b) PCT. The reasons are as followed:
  - I.2.1 Amended claim 1 lacks the feature of original claim 1 of "a plurality of magnets **located around a perimeter** of the first or second housing". The scope of claim 1 is therefore broader than originally disclosed in the application. No indication was given in the application as originally filed that the magnets could be located anywhere else than around a perimeter of the first or second housing. For this examination it was assumed that this feature is still present.
  - I.2.2 According to the applicant, amended claim 14 is based on page 7 and 8 of the description. However, it seems that those pages of the description broadly refer to all kinds of well-known basic principles for energising electromagnets of a motor. No clear statement corresponding to claim 14 is made in the description.
  - I.2.3 Figures 1 and 6 have been cited by the applicant as giving a basis for claim 15. However, these drawings are schematic illustrations only. No clear statement can be found in the application saying that there has to be exactly the same number of magnets on the first and second housing. This number could be just a coincidence.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

- V.1 Reference is made to the following documents of the search report:

**D1: US-A-5696419**

**D2: US-A-5075606**

**D3: US-B1-6249071**

**D4: US-B1-6486582**

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and to the following document which is annexed to this report:

**D5: US3183428 (DIEHL J E) 11 May, 1965**

**V.2 Overview of the prior art documents D1 - D5:**

Independent claim 1 attempts to claim the basic features of an electric rotating machine, which is a stator, a rotor and magnetic field elements to drive the rotor, the subject-matter of claim 1 can be found in all kind of electric rotating machines as known in the art. In the light of the description, the discussion of the prior art will be focused on disc-type motors having a flat rotor. The following documents disclose various types of such motors:

- V.2.1 Document D1 refers to a high efficient electric machine having a disc-shaped rotor (16) with permanent magnets (32) mounted on its outer periphery. The stator (14) has electromagnets axially facing the rotor disk from two sides (see D1, Fig.2). The stator might be an inner stator (see D1, Fig.1) or an outer stator (see D1, Fig.3).
- V.2.2 Documents D2 and D3 both refer to fan motors having outer stators with electromagnets located around their perimeters and facing permanent magnets on the rotor to directly drive a fan propeller.
- V.2.3 Document D4 discloses an electric machine rotating by induction force and suitable to drive a wheel.
- V.2.4 Document D5 discloses a conventional DC commutator motor with electric excitation.

V.3 It is considered that the invention as defined in independent claim 1 does not meet the criteria mentioned in Article 33(2) PCT, i.e. is not novel. The reasons are as followed:

- V.3.1 Claim 1 specifies that "the magnets on **either** of the first or the second housing are electromagnets". It is therefore not entirely clear if there are only electromagnets on both housings or also permanent magnets (Art.6 PCT). Furthermore it is not clear what is meant by "electromagnets are energised **simultaneously**" as claim 1 does not say which of the electromagnets are energized and how the polarity of the electromagnets is when they are energized (Art.6 PCT).

- V.3.2.1 Considering the description and embodiments of the application it seems that there are permanent magnets on one of the housings and electromagnets on the other of the housings. Based on this interpretation claim 1 lacks novelty in view of D1 - D4:
- V.3.2.2 As stated above, the subject-matter of claim 1 seems to be a motor comprising: a first part having a radius greater than the second part. A second part at least partially locating the first part, both parts are rotatably with respect to each other. A plurality of magnets are located around a perimeter of the first or second part to cause the other part to rotate. All electric machines disclosed in D1 - D4 comprise such parts. D1 for example discloses: An electric machine (10) comprising a first outer part, which is the rotor (16) partially located within a second inner part, which are the stator members (18) of stator (14). The rotor has a plurality of permanent magnets (32) near its outer periphery and can rotate relatively to the stator. Thus, the outer part of the electric machine rotates with respect to the inner part. (see D1, column 3, line 34 - column 4, 50, Fig.1,2). D1 further discloses a second embodiment working in a way that an inner part, which is rotor (104), is partially located within the outer part, which is stator (102). The inner rotor part (104) rotates with respect to the outer stator part (102). (see D1, column 5, line 44 - column 6, line 19, Fig.3). Moreover, it can be seen in Fig.1 and Fig.3 that the rotor has a radius greater than the width of the stator. Even if the electric machine of D1 is a generator, it is obvious that this machine could also be used as a motor.
- The subject-matter of claim 1 is therefore not new and claim 1 does not meet the requirements of Article 33(2) PCT.
- V.3.2.3 Moreover, the subject-matter of claim 1 is also not new as it is already disclosed in D2, D3, D4. See D2, Fig.3,4. See also D3, Fig.1. See also D4, Fig.2,3.
- V.3.3.1 Using a different interpretation of claim 1, it is assumed that there are electromagnets on both of the housings. Claim 1 then also is not novel: Independent claim 1 attempts to claim the basic principle of an electric rotating DC motor. An electric DC motor usually comprises a stator having

field generating windings (electromagnets), a rotor having armature windings (electromagnets). In an electric DC motor the field generating windings and the armature windings are energised **simultaneously** with opposite polarities. The electromagnets on the rotor then will be repelled from the electromagnets on the stator and the rotor will begin to turn. This basic principle is well known to a skilled person and was already invented in the 19th century. Document D5 shows an example of such a motor (see D5, Fig.1).

The subject-matter of claim 1 is therefore not new and claim 1 does not meet the requirements of Article 33(2) PCT.

V.3.3.2 It should be noted that the examiner has doubts if the subject-matter of claim 1 provides the technical effect of a force that rotates the rotor. To rotate the rotor, the electromagnets have to be energised simultaneously with **opposite polarities** so that a repelling force between two opposed magnets is generated. **However, claim 1 does not mention how to energize the magnets.**

V.4 Dependent claims 2 - 15 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the Art.33 (2) (PCT) in respect of novelty. The reasons are as followed:

V.4.1 Claim 2 is not new: See D1, Fig.1,2. Also D2, D3, D4 have magnets on both the rotor and the stator.

V.4.2 Claim 3 is not new: See D4, Fig.1, magnets of alternating polarity are disposed on the inner part of the electric machine. See also D3, Fig.1 magnets of alternating polarity are located around a perimeter of the rotor.

V.4.3 Claim 4 is not new: See D4, Fig.4A - 4D and column 4, line 1 - 39, the electromagnets (16A,16B) on the stator are energized to set up alternating magnetic polarities.

V.4.4 Claims 5,6 are not new: See D1, column 4, line 35 - 40: all permanent-magnets are oriented in the same direction and therefore have the same polarity.

V.4.5 Claim 7: is not new, see D1 - D4: all magnets are either permanent magnets or electromagnets.

V.4.6 Claims 8,9 are not new, see D4, Fig.4,5,19,20. Moreover, the skilled person would choose the dimensions of the radius to width of the rotor according to



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the application of the electric motor. Claims 8,9 are a matter of the normal design procedure.

- V.4.7 Claim 10 is not new, see D2, Fig.3: There are eight permanent magnets (52) around the circumference of the rotor and twelve electromagnets (54) around the circumference of the stator. This means there is an angle of 45 Degrees between two adjacent permanent magnets and an angle of 30 degrees between two adjacent electromagnets. Consequently, if a first permanent magnet is aligned to an electromagnet, the next adjacent permanent magnet will be 15 Degrees away from an electromagnet next to it. Therefore the angle between two magnets and their forces attracting each other is less than 25 Degrees. Furthermore, as this example from D2 shows, the resulting angle between two magnets attracting each other depends on the number of magnets on the stator and on the rotor and consequently is a matter of the normal design procedure.
- V.4.8 Claim 11 is not new: See D2, Fig.3,7 and D3, Fig.1: both electric machines have rotors that are propellers.
- V.4.9 Claim 12 is not new: See D1 - D5.
- V.4.10 Claim 13 is not new: See D4, Fig.5 and column 4, line 34 - 48, the motor forms a wheel. As the motor serves to drive the bicycle it becomes a motor vehicle.
- V.4.11 Claim 14 is not new: A switching mechanism to alter the polarity of electromagnets is a basic feature of every motor. This may be a commutator or an electronic switch (see D1 - D5).
- V.4.12 Claim 15 is a standard feature of an DC motor and therefore not new (see for example D5, Fig.1)

**V.5 Industrial applicability:** All claims 1 - 15 seem to be industrial applicable.

**V.6 Further comments:**

- V.6.1 **The application fails to meet the requirements of Art.5, PCT.** Reading the description of the application it merely seems that all sorts of basic principles of an electric motor (such as AC induction motor having a rotating field or DC motors with or without permanent magnets) are disclosed. All kind of

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switching mechanisms are named, but it is not clear, what kind of switching mechanism has to be applied (e.g. descr. page 8, par. 4).

Furthermore, it seems that some of the combinations of magnets/switching mechanisms disclosed in the description simply do not work.

The skilled person therefore would not know how to carry out the invention (Art.5. PCT).

V.6.2     **The application is not clear and fails to meet the Art.6, PCT with respect to clarity of the claims, conciseness and support in the description.**  
This matter will be discussed in further detail if the application enters the regional phase.

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**Claims:****1. A motor comprising:**

a first housing having a radius which is greater than the width of the housing and having a plurality of magnets located thereon; and

a second housing having an opening therein in which the first housing is at least partially located and having a plurality of magnets located thereon, wherein either of the first or second housings is able to rotate with respect to the other housing;

wherein the magnets on either of the first or the second housing are electromagnets and wherein the electromagnets are energised simultaneously when the motor is in use so that the magnetic force of the magnets causes the one housing to rotate with respect to the other housing.

- 2. A motor according to claim 1 wherein the plurality of magnets are located around a perimeter of the first and/or second housing.**
- 3. A motor according to claim 2 wherein the magnets located on the first housing are of alternating polarities.**
- 4. A motor according to claim 2 wherein the magnets located on the second housing are of alternating polarities.**

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5. A motor according to claim 2 wherein the magnets located on the first housing are of the same polarity.
6. A motor according to claim 2 wherein the magnets located on the second housing are of the same polarity.
7. A motor according to any preceding claim wherein the magnets which are not electromagnets are either permanent magnets or electromagnets.
8. A motor according to any preceding claim wherein the first housing has a ratio of radius to width of at least 2:1.
9. A motor according to claim 8 wherein the first housing has a ratio of radius to width of at least 8:1.
10. A motor according to any of claims 2 to 9 wherein the angle of the forces acting between adjacent ones of the magnets on the first housing and the magnets on the second housing does not exceed 25 degrees.
11. A motor according to any preceding claim wherein the first housing is able to move with respect to the second housing and wherein the interior of the first housing is formed into a plurality of propeller blades.
12. A motor according to any of claims 2 to 11 wherein both poles of the magnets on either the first or second housing act simultaneously on the magnets of the other housing.
13. A motor according to any preceding claim wherein the motor forms the wheel of a motor vehicle.

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14. A motor according to any preceding claim wherein the polarity of the electromagnets are alternated by a switching mechanism when the motor is in use.

15. A motor according to any preceding claim wherein there are the same number of magnets located on the first and second housings.

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